

National Transportation Safety Board
Washington, DC 20594

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Brief of Accident

Adopted 02/05/1998

ANC96FA072 File No. 1449	05/16/1996	ANCHORAGE, AK	Aircraft Reg No. N614FE	Time (Local): 06:33 ADT		
Make/Model:	Mcdonnell Douglas / MD-11-F			Fatal	Serious	Minor/None
Engine Make/Model:	Ge / CF6-80C2		Crew	0	0	2
Aircraft Damage:	Substantial		Pass	0	0	0
Number of Engines:	3					
Operating Certificate(s):	Cargo; Flag Carrier/Domestic; Supplemental					
Name of Carrier:	FEDERAL EXPRESS					
Type of Flight Operation:	Non-scheduled; Domestic; Cargo					
Reg. Flight Conducted Under:	Part 121: Air Carrier					
Last Depart. Point:	NEWARK, NJ			Condition of Light:	Day	
Destination:	Same as Accident/Incident Location			Weather Info Src:	Weather Observation Facility	
Airport Proximity:	On Airport/Airstrip			Basic Weather:	Visual Conditions	
Airport Name:	ANCHORAGE INTERNATIONAL			Lowest Ceiling:	10000 Ft. AGL, Broken	
Runway Identification:	24R			Visibility:	60.00 SM	
Runway Length/Width (Ft):	10601 / 150			Wind Dir/Speed:	150 / 005 Kts	
Runway Surface:	Asphalt			Temperature (°C):	8	
Runway Surface Condition:	Dry			Precip/Obscuration:		
Pilot-in-Command	Age: 48			Flight Time (Hours)		
Certificate(s)/Rating(s)				Total All Aircraft:	17500	
Airline Transport; Flight Engineer; Multi-engine Land; Single-engine Land				Last 90 Days:	Unk/Nr	
Instrument Ratings				Total Make/Model:	1470	
Airplane				Total Instrument Time:	UnK/Nr	

MD-11 was cleared visual approach (apch) to runway (rwy) 24R, 3 mi (1 min) behind Boeing 747 (landing on rwy 24L). Rwy were 550 ft apart with rwy 24L threshold staggered 4300 ft beyond that of rwy 24R. MD-11 captain (capt) used VASI, which had 3.25 deg glide path. On final apch, 21 kt left crosswind diminished to about 5 kts. From 100 ft agl, MD-11 exhibited left, then right roll & slight yawing. About 50 ft agl, MD-11 entered high sink rate. Capt began go-around & raised nose. Lower aft fuselage hit rwy & MD-11 bounced. Capt discontinued go-around; MD-11 bounced two more times; sustained damage to aft pressure bulkhead. Last 20 sec of flight, MD-11 averaged 1380 ft/min rate of descent, 152 kts, 5.12 deg apch angle. MD-11 flight manual discussed visual apchs, go-around procedure, & tail/wing clearance issues, but operator did not have formal tailstrike awareness training for MD-11 pilots. After accident, operator developed tail strike awareness training program that included bounced landing recovery & simulator training, & limited pitch attitude to 7-1/2 deg for recovery from bounced landing. AIM recommended that for landing behind larger acft on parallel rwy, closer than 2500 ft, stay above larger acft's flight path. Tower controller did not issue precaution for wake turbulence.

Brief of Accident (Continued)

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Occurrence #1: VORTEX TURBULENCE ENCOUNTERED
Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

Findings

1. (C) PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
2. TRAFFIC ADVISORY - NOT ISSUED - ATC PERSONNEL(LCL/GND/CLNC)
3. (F) AIRPORT FACILITIES,RUNWAY/LANDING AREA CONDITION - OTHER
4. (F) PLANNED APPROACH - IMPROPER - PILOT IN COMMAND
5. (F) WEATHER CONDITION - CROSSWIND
6. WAKE TURBULENCE - ENCOUNTERED - PILOT IN COMMAND

Occurrence #2: HARD LANDING
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

7. GO-AROUND - DELAYED - PILOT IN COMMAND
8. FLARE - NOT ATTAINED - PILOT IN COMMAND
9. RECOVERY FROM BOUNCED LANDING - INITIATED - PILOT IN COMMAND
10. INADEQUATE TRAINING(EMERGENCY PROCEDURE(S)) - COMPANY/OPERATOR MANAGEMENT

Occurrence #3: DRAGGED WING,ROTOR,POD,FLOAT OR TAIL/SKID
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

11. FUSELAGE,PRESSURE BULKHEAD - BUCKLED

Findings Legend: (C) = Cause, (F) = Factor

The National Transportation Safety Board determines the probable cause(s) of this accident as follows.
the pilot's improper in-flight planning/decision, which allowed the airplane (MD-11) to encounter wake turbulence from a larger/heavy jet airplane (Boeing 747), while on a short final approach for landing on a close-by/parallel runway with a staggered threshold. Factors relating to the accident were the staggered/off-set runway thresholds, which positioned the normal approach path of runway 24R below that of runway 24L; the steeper than normal final approach path; and the left crosswind, which resulted in wake turbulence drifting from the Boeing 747's approach path to the MD-11's approach path.